NIH Center for Information Technology

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AT A GLANCE:
Research and Technology at the NIH

OVERVIEW

As the largest biomedical research agency in the world, the National Institutes of Health (NIH) relies on technology to advance discovery. This includes having a secure, reliable, and fast way to share large amounts of information; access to robust computing resources for analyzing data; and the ability to share data and collaborate.

With help from the Center for Information Technology (CIT), NIH achieves these objectives by using several advanced enterprise solutions: a powerful, modernized network; a cutting-edge, high-performance supercomputer; innovative cloud computing tools and technologies; and a range of "anytime, anywhere" communication and collaboration tools that allow NIH researchers and other staff to work when—and where—they need to.

THE NIH NETWORK

Through a modernized network—both high speed and high bandwidth—NIH researchers and external collaborators are now transferring large research data sets at faster rates than ever. Featuring a powerful 100Gb core (the central part that connects customers to various services), the NIH network moves up to 8 PB of data per day—that's almost 32 times all the material in the Library of Congress!—and features a 100 GB connection to the Internet 2 (an advanced technology community and network founded by the nation's leading higher education institutions). At such speeds, researchers on the NIH network could send an entire human genome file from one lab to another in under two minutes, making collaboration on data-intensive work like biomolecular imaging faster, easier, and more effective. As of May 2018, the network connects 65,000 scientific research devices, laptops, desktops, and mobile devices at NIH facilities across the Washington, DC, and Maryland metropolitan areas, Arizona, Montana, and North Carolina.

HIGH-PERFORMANCE COMPUTING

NIH provides its Intramural Research Program (IRP) investigators with state-of-the-art High Performing Computation (HPC) resources, which provide a critical foundation for advancing the wide variety of biomedical research at NIH. A recent expansion to Biowulf, NIH's supercomputer and the largest of the HPC resources, allows researchers to conduct the large-scale data analysis required for such disciplines as genomics, molecular simulation, imaging, and proteomics. Thanks to Biowulf, which continues to be ranked in the top 100 on the TOP500 list of the most powerful supercomputers in the world, the NIH IRP community is now one of the world's leaders in the biomedical computing space.

STRIDES IN ACCELERATING CLOUD COMPUTING

NIH's STRIDES (Science and Technology Research Infrastructure for Discovery, Experimentation, and Sustainability) Initiative harnesses the power of commercial cloud computing and provides NIH biomedical researchers access to the most advanced, cost-effective computational infrastructure, tools, and services available. With Google Cloud as its first industry partner, STRIDES aims to reduce economic and technological barriers to accessing and computing on large biomedical data sets to accelerate biomedical advances. The initial agreement with Google Cloud also creates a cost-efficient framework for NIH researchers, as well as researchers at more than 2,500 academic institutions across the nation receiving NIH support, to make use of Google Cloud's storage, computing, and machine learning technologies. In addition, the partnership will involve collaborations with NIH's Data Commons Pilot—a group of innovative projects testing new tools and methods for working with and sharing data in the cloud—and help establish training programs for researchers at NIH-funded institutions on how to use the Google Cloud

Platform. Both the Data Commons Pilot and STRIDES are key components of the NIH's New Models of Data Stewardship program, which is designed to enhance biomedical discovery and improve efficiency through new digital data management strategies.

ANYTIME, ANYWHERE COMMUNICATION AND COLLABORATION

The ability to share data and collaborate is crucial to NIH's research efforts. CIT provides several state-of-the-art communication and collaboration tools to the NIH community that encompass voice and video communication, instant messaging, email, and file and desktop sharing capabilities. These tools, described below, help NIH staff work efficiently and collaboratively from almost any location.

- *Desktop Voice and Video* – Integrate your phone and computer to provide expanded functionality, including click-to-call capability, voice and video calls, video conferencing, instant messaging, online presence, file and screen sharing in real time, and call forwarding capabilities.
- *Livestream Events* – Broadcast your event in real time using CIT's VideoCast service and archive it for later viewing.
- *Virtual Meeting Spaces and Collaboration* – Use WebEx to create online (virtual) meeting spaces for webinars, trainings, and meetings (up to 1,000 participants). WebEx features include screen and file sharing, a virtual white board, polling (for questionnaires, feedback), and breakout rooms. Also record and save meetings for later viewing.
- *File Sharing and Management* – Share, view, and edit files (both locally and remotely) and store data securely and centrally using SharePoint and OneDrive.
- *Video Teleconferencing* – Connect two or more physical conference rooms using a television-style signal for real-time voice and video conferencing.

LEARN MORE

The NIH Network

To learn more about the NIH network and related services, visit the following resources:

- CIT website: https://www.cit.nih.gov/solutions
- CIT's Network Services page: https://www.cit.nih.gov/service/network-services
- CIT's high-speed research network at NIH initiative page: https://www.cit.nih.gov/initiative/high-speed-research-network

High-Performance Computing at NIH

- For more information on HPC Biowulf and gaining access to the expert staff, visit https://hpc.nih.gov or https://www.cit.nih.gov or contact staff@hpc.nih.gov.
- To set up an account today, visit https://hpc.nih.gov/docs/accounts for step-by-step instructions.

STRIDES

To learn more about STRIDES, go to https://commonfund.nih.gov/strides

Anytime, Anywhere Communication and Collaboration

To learn more about CIT's communication and collaboration services, visit the following resources:

- CIT website: https://www.cit.nih.gov/solutions
- NIH IT Service Desk: https://itservicedesk.nih.gov or 301.496.4357
- To find the right communication tool or service for your meeting or event, go here https://video.nih.gov/decisiontool/ to use the Unified Communication and Collaboration Decision Tool.